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10/709,677	05/21/2004	Carles Borrego Bel	8153ES	3676

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EXAMINER
AMRANY, ADI

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/709,677	BORREGO BEL ET AL.	
	Examiner	Art Unit	
	Adi Amrany	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☒ Claim(s) *1-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 May 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/21/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. In the Application Data Sheet, applicants claim both continuity and foreign priority for the present application based on the same two documents; PCT filed 11/2001 and WO document filed 7/2003. It appears that the present application is a continuity application based on the PCT or WO documents and that there should be no foreign priority claim. It is requested that applicants clarify the status of the present application with respect to continuity and foreign priority.

Drawings

2. The drawings are objected to because the items shown in figures 1 and 2 are improperly labeled. The converter DC/DC is improperly labeled "CC/CC", the module SMM is labeled "MMC" and network N is labeled "R", the (F/R)PDU is labeled "UDP" in figure 1 and "UDP(C/D/T)" in figure 2, and the control node CN is labeled "NC", .

3. It is requested that the components of figures 1 and 2 be provided with reference *numbers*, as will be discussed below.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The specification is replete with terms which are not clear, concise and exact. The specification should be revised. Examples of some unclear, inexact or verbose terms used in the specification are:

a. It appears that "control microcontrollers" (paragraph 26, lines 9-10), microcontrollers (paragraph 26, line 14), and microcontrollers 10a,20a,30a (paragraph 31, line 2) are the same components. A consistent name and reference number must be used to correspond to the same components throughout the specification.

b. Paragraphs 25 and 31; there is no description of how B1 (12 volts) and B2 (36 volts) become 14-volt and 42-volt power sources, respectively.

c. Paragraph 33, lines 1-2; the description of the method of the application is indefinite because it contains the phrase "basically comprises" (paragraph 33,

lines 1-2). "Basically" infers that the method does not have to include some/all of the steps included in the specification.

Only a few examples are provided. Applicants are required to revise and amend the remainder of the specification.

5. It is requested that applicants insert the phrase "I/we claim" or "The invention claimed is" (MPEP 608.01(m)) at the beginning of the list of claims.

Claim Objections

6. Claims 1-19 are objected to because the claims are replete with grammatical errors and redundant phrases, which cause the claims to be confusing and unclear.

Claim 1 is objected to because of the following:

Lines 6-7, the phrase "intended for a differentiated electric power supply to respective network sectors" is unclear. For the purposes of the art rejection of claim 1, the phrase will be interpreted as, "intended *as* a differentiated electric power supply *for* respective network sectors." Support for this interpretation can be found in paragraph 25, lines 4-7.

Lines 8-9, the phrase "provided with power distribution units (10), (20), (30) *to the loads*" is unclear. The phrase is missing a verb between the subject (PDUs) and the object (loads). For the purposes of the art rejection of claim 1, the phrase will be interpreted as, "power distribution units, that direct power to the loads". Support for this interpretation can be found in paragraph 25, lines 7-

8. Further, the phrase "power distribution units to the loads" found in lines 23-24 will be interpreted as "*of* the loads".

Line 12, the phrase "*being susceptible* of being fed" is indefinite. The claim must particularly point out and distinctly claim the subject matter of the invention.

Lines 16-17, the recitation that battery B1 has "associated module SMM associated *based on* a microcontroller" is indefinite. The multiple uses of "associated" renders the claim unclear. Further, the phrase, "based on", is indefinite. See MPEP § 2173.05(b). The specification does not provide further clarification on this claim language. Is the module a microcontroller? Does the module contain a microcontroller? Does the module act like a microcontroller?

Line 18, the use of "at least" renders the claim indefinite. There must be a clear recitation of the electrical characteristics that are monitored by the module SMM.

Line 20, the use of the word "which", as recited in the phrase "which monitoring module", is unclear. For the purposes of the art rejection of claim 1, "which" will be replaced with "the".

Line 20, there is no basis for the phrase "which monitoring module". Claim 1 also recites the limitations of a module SSM (line 16) and monitoring module SSM (line 26). As discussed above, the same components must be referred to by the same name throughout the claims. For the purpose of the art rejection of

claim 1, all recitations of the module component will be replaced with "module SSM".

Lines 28-29, the limitation of "followed by *some* predetermined, sensed voltage and current values" is indefinite. For the purpose of the art rejection of claim 10, the word "some" has been removed.

Lines 31-32, the limitation of "a short-circuit protection process" is indefinite. For the purposes of the art rejection of claim 1, it will be interpreted to mean activation of the automatic disconnection device SDB (lines 5-6).

With respect to claim 2, the claim appears to remove limitations from the communications network N established in claim 1. Claim 1 recites that the communications network N connects the microcontroller of module SMM of battery B1 to each of the microcontrollers of the PDUs. Claim 2, which is dependent on claim 1, then recites that the communications network N of claim 1 only links only the microcontrollers of the PDUs. Firstly, it does not appear that the system would be enabled if the communications network N did not connect to the module SMM of battery B1. Secondly, since the communications network N connects the module SMM of battery B1 to each of the PDU microcontrollers, it is inherent that all of the PDU microcontrollers are then linked to each other.

Further, there is no basis in the specification for the limitation of "peripheral units". The only other units disclosed in the specification are the loads, and the specification does not disclose that any of the loads contain microcontrollers. Since the

loads do not contain microcontrollers, they cannot be linked to the communications network N.

Claims 3 is dependent on, and therefor, include the limitations rejected in claim 1.

With respect to claims 4 and 5, the recitation that "said monitoring module SSM *based on* a microcontroller or control node *CN*' is indefinite for the reasons provided above.

Further regarding claims 4 and 5, the phrase "included in an assembly applied to" is unclear. It is interpreted that the module SMM is included in an *assembly of components* and that assembly is then *applied to the task of*.

With respect to claim 6, it is objected to because:

Line 2, the phrase "to the loads" has been interpreted as "of the loads", for the reasons discussed above.

Lines 4-5, the phrase "comprise a portion that supplies loads of said sector" is unclear and misdescriptive. "Comprise a portion" indicates that the power distribution units physically include a section of another device. It appears that applicants intended to use "a portion" to mean a fraction or percentage, as in, "a portion of *all* of the PDUs." The phrase will be interpreted, therefor, to read, "a portion of said power distribution units of the loads, controlled by a microcontroller, supplies the loads (22),(23) of said sector". Further, the second recitation of "a portion" in line 6 is interpreted to state, "*the remaining portion* of said power distribution units".

Line 7, there is no basis for the term "power loads". As there is no distinction between "loads" and "power loads", and the same reference numbers are used with both terms, all instances of "power loads" in the claims will be replaced with "loads".

With respect to claim 7, it is objected to for being indefinite, for the reasons given below:

Line 2, the phrase "governed from devices" is unclear. For the purposes of the art rejection of claim 7, the phrase will be interpreted as "governed *by* devices". The basis for this interpretation can be found in paragraph 31, lines 12-14, which states that the switches control the loads.

Line 3, there is no basis for the component switches with current sensing, as will be discussed below.

Line 4, the phrase, "the power switches of which are controlled", is unclear. Since there is no disclosure in the specification to indicate that the switches are divided into different portions/sections, it is interpreted that application intended to recite "the power switches, all of which are controlled".

Line 6, "unit" should be rewritten "power distribution unit (10), (20), (30)".

With respect to claim 7, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

With respect to claim 9, there is no basis for the limitation of an electronic control module. For the purposes of the art rejection of claim 9, the electronic control module

will be interpreted as the module SMM. The basis for this interpretation can be found in paragraph 30. The specification discloses that batteries B1 and B2 are provided with a monitoring module and a control node (lines 3-7). As discussed above, the monitoring module is considered to be the module SMM. The specification also discloses that the control node CN is equivalent to the module SMM (lines 14-19). There is no disclosure in the specification, however, of an electronic control module. Further, the recitation in line 3, that the module SMM (electronic control module) is "based on a microcontroller" is indefinite, as discussed above.

With respect to claim 10, it is objected to for being indefinite for the reasons provided below:

Lines 2-5, the phrase "said PDUs comprise a connection of each one of said switches to said microcontroller of the corresponding unit for a prior sensing" is unclear and misdescriptive. It is unclear how the PDU can comprise/include a connection of another device (switch) to a part of itself (microcontroller). A connection exists externally to the components that it links.

Further, it is unclear which sentence fragment of the claim is associated with "for a prior sensing". The main object of the claim appears to be the connection of the switches to the microcontroller, however, it is unclear how a connection relates to "for a prior sensing".

Lines 8-9, there is no basis for the limitation of "said values". For the purposes of the art rejection of claim 10, "values" is interpreted to mean the sensed voltage or impedance (*values*) of the switches (lines 5-6).

Lines 8-9, the limitation of "allowing avoidance of said connection if said values are out of *some* predetermined margins" is indefinite. For the purpose of the art rejection of claim 10, the word "some" has not been considered

7. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim, which depends from a dependent claim, should not be separated by any claim that does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

Claim 10 should not be separated from claim 7 by claim 9, which does not also depend on claim 7.

8. Claims 1, 4, 7-8 and 10 are objected to for failing to comply with the written description requirement.

With respect to claim 1, there is no written description to detail how the module SSM (or microcontroller) monitors the voltage and current of battery B1 or how the module SSM senses the operating state of the DC/DC converter. There is no written description regarding the different possible operating states of the DC/DC converter, and no description detailing which of the operating states would invoke a response from the module SSM.

With respect to claim 4, there is no written description in the specification disclosing the dynamical measurement of the state of health (SOH) and state of charge (SOC) of the battery B1 (paragraph 30, lines 5-7). There is no disclosure in the

specification that distinguishes the dynamic measurements of the SOH and SOC, in claim 4, from the sensed voltage and current values of B1, in claim 1.

With respect to claim 7, there is no written description disclosing the recitation that the power switches (23a, 33a) have "current sensing" (line 3). The specification states the use of power switches with current sensing (paragraph 31, lines 13-16). There is no actual disclosure of the component, however, beyond the recitation of its name (see also paragraph 40, lines 1-6). All switches must accept an input/signal (current or voltage) in order to initiate the switching mechanism. The applicants do not provide a basis for a switch with current sensing that distinguishes it from a common switch. Therefor, for the purposes of the art rejection of claim 7, the limitation of "current sensing" will be interpreted as the switch receiving and acknowledging a switching input/signal.

Further, there is no written description in the specification disclosing how the switches "govern" the loads. The switches disconnect the loads from the power distribution units, but the control input/signal for doing so originates from the microcontroller of the power distribution unit (paragraph 40, lines 4-6). This relationship is also recited in the last lines of claim 7. Therefor, for the purposes of the art rejection of claim 7, it is interpreted that the power distribution units, not the switch, govern the loads.

With respect to claim 8, there is no written description to support the recitation that the power switches are FET devices *with current sensing*. This relationship is

provided in the specification (paragraph 31, line 15). There is no disclosure, however, to indicate that FET devices are anything more than a normal field effect transistor.

Claim 10 is rejected because the specification does not disclose how the voltage or impedance is sensed at the output of the switch or what component does the sensing (paragraph 40).

9. Method claims 11-19 are objected to for issues similar to those discussed above. Applicants are required to review and revise claims 11-19.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim (US 5,867,007), in view of Lofty (US 5,850,351), and in further view of Miller (US 2005/0017654).

The language of claim 1 prevents a detailed limitation-specific analysis of the references listed above. As best as the examiner can interpret the language of claim 1, as discussed in the objections of claim 1, Kim and Lofty, in combination with Miller, meet the recited limitations.

Kim discloses an electrical system where the voltage of the first battery is lower than the second battery, a module, and a DC/DC converter (figure 2; column 1, line 63

to column 2, line 4; column 3, lines 56-64). Kim discloses that the batteries are provided with an automatic disconnection device (figure 2, items 611, 612, 631, 632; column 4, lines 20-22). The monitoring module disclosed by Kim is listed as a "smart battery circuitry". The smart battery circuitry comprises a voltage detector (figure 2, item 300; column 4, lines 32-51) that compares the voltage at the posts of the batteries to a preset level. In the event that the voltage level drops below the set level, the microcontroller (figure 2, item 500) of the smart battery circuitry emits a signal to trigger the switches of the automatic disconnection device.

Lofty discloses a dual battery system, where each battery contains a monitoring module (figure 1, items 11, 12; column 2, lines 30-32). The modules include a microcomputer, and monitor electronic characteristics of the battery (column 2, lines 47-49). The microcomputers of each module communicate with each other through a data network (figure 1, item 15; column 2, lines 34-38).

Kim and Lofty are analogous because they are from the same field of endeavor, namely battery monitoring modules. Further, Kim and Lofty disclose a multiple battery electrical system, where each battery includes a microcontroller for monitoring performance characteristics of the battery.

At the time of the invention by applicants, it would have been obvious to a person of ordinary skill in the art to combine the electric source circuitry disclosed in Kim with the battery data network disclosed in Lofty.

The motivation for doing so would have been to create a battery selection circuit for devices with dual batteries.

Miller discloses a dual voltage electrical load system. The system includes high-voltage and low-voltage power sources (paragraphs 3-4) of an automobile that are connected to a generator. Miller discloses a plurality of loads (paragraph 16; figure 1, item 17-19), where each load comprises a power distribution unit (figure 1, items 14-16). The power distribution units maintain an average output voltage that is within the accepted range for each load.

Kim, Lofty, and Miller are analogous because they are from the same field of endeavor, namely, electronic distribution systems. Further, Miller is designed for use in a dual voltage electrical automotive system.

At the time of the invention by applicants, it would have been obvious to a person of ordinary skill in the art to combine the electric source circuitry disclosed in Kim and the data network disclosed in Lofty with the power distribution units disclosed in Miller.

The motivation for doing so would have been to create a smart circuitry that could detect the proper voltage levels at the source and distribute the power appropriately to the loads.

With respect to claim 2, Kim, Lofty and Miller disclose the system according to claim 1. Lofty further discloses that the communications network N is a dedicated network that links the microcontrollers of the power distribution units. The common data bus disclosed in Lofty is only shared among the components of the system, thereby making it a dedicated network. The communications network N is not interpreted as being limited to communications between the power distribution units, as discussed in the claim 2 objection, above.

With respect to claim 3, Kim, Lofty and Miller disclose the system according to claim 1. Lofty further discloses that the communications network N is a shared bus, such as a CAN bus, that links the microcontrollers of the power distribution units. The common data bus disclosed in Lofty is bus that is shared among the components of the system, thereby meeting the limitations of claim 3. The communications network N is not interpreted as being limited to communications between the power distribution units, as discussed above.

With respect to claim 4, the claim is rejected as not further limiting claim 1. As discussed above, there is no disclosure in the specification that distinguishes the measurements of the State of Health (SOH) and State of Charge (SOC) of the battery B1, as recited in claim 4, from the measurements of the sensed voltage and current of battery B1, as recited in claim 1.

With respect to claim 5, Kim, Lofty and Miller disclose the system according to claim 1, and further combine to further disclose the module SMM *based on a microcontroller or control node CN* is included in an assembly applied to the control and management of all or part of the loads fed by said battery B1. Kim and Lofty, as discussed above, disclose that battery B1 includes a module SMM for monitoring and controlling the output of the battery B1. Further, this module SMM is included in an *assembly of components*, which includes the power distribution units and loads of Miller. Therefor, the references cited above combine to disclose the limitations of claim 5.

With respect to claim 6, Kim, Lofty and Miller disclose the system according to claim 1. Miller discloses said power distribution units (10), (20), (30) to the loads (12),

(22), (23), (32), (33) controlled by a microcontroller (10a), (20a), (30a), comprise a portion that supplies loads (22), (32) of said sector, at a lower voltage level, fed from battery B1, and a portion dedicated to said power loads (23), (33) included in said higher-voltage-level sector fed by said battery B2. Miller discloses that system is for use in a dual-voltage electrical automotive system (paragraph 17, lines 8-10). Miller also discloses that any type and any number of bulb loads may be used with the power distribution units (paragraph 16, lines 7-13).

It would be obvious to a person of ordinary skill in the art to adjust the power distribution units according to its associated load. Further, it would be obvious that some of the loads may require one of the high or low voltages in the dual voltage electrical automotive system. The power distribution units configured to the supply the high-voltage loads from the high-voltage battery would inherently be in a different group than the power distribution units configured to the supply the low-voltage loads from the low-voltage battery (Miller, paragraphs 3-4).

With respect to claim 7, Kim, Lofty and Miller disclose the system according to claim 6. Miller further discloses said power loads (23), (33) are governed from devices such as power switches (23a), (33a) with current sensing, the power switches (23a), (33a) of which are controlled from the corresponding microcontroller (20a), (30a) of the unit (paragraph 16, lines 2-5). The register (13), by activating the proper power distribution unit (bulb drivers 14-16), of Miller can selectively apply and/or remove power from each of the loads. It is obvious in the disclosure of Miller that the on/off signal

transmitted by the power distribution units would activate a switch within the bulb to execute the command.

With respect to claim 8, Kim Lofty and Miller disclose the system according to claim 7, and further, it would have been obvious to use a field effect transistor (FET) as the switch. It is well known in the art to use FETs as switching devices.

With respect to claim 9, Kim, Lofty and Miller disclose the system according to claim 1. Lofty discloses each one of said batteries B1 and B2 is provided with a *module SMM based on* a microcontroller for controlling at least a disconnection device (SDB) of said batteries (column 2, lines 30-32 and 47-62).

With respect to claim 10, Kim, Lofty and Miller disclose the system according to claim 7. Miller discloses said power distribution units (10), (20), (30) *comprise a connection* of each one of said power switches (23a), (33a) to said microcontroller (20a), (30a) of the corresponding unit (20, 30) *for a prior sensing* of the voltage or impedance at the output of said power switches (23a), (33a) prior to connecting the controlled load (23), (33), allowing avoidance of said connection if *said values* are outside of some predetermined margins (paragraph 16). Miller discloses that the power distribution units can activate the loads to optimize low-peak currents (lines 10-15). It is obvious that the power distribution units would access the operability of each load prior to activating the load. The PDUs would do so in order to prevent a load operating outside of an acceptable margin from overloading the system. .

Claims 11-19 are rejected because the apparatus necessary to accomplish the method disclosed has been rejected in claims 1-10, as discussed above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adi Amrany whose telephone number is (571) 272-0415. The examiner can normally be reached on weekdays, from 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PHUONG T. VU
PRIMARY EXAMINER